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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,068	07/03/2003	Koji Ida	67161-053	3511
7590	03/29/2004		EXAMINER	
McDermott, Will & Emery 600 13th Street, N.W. Washington, DC 20005-3096			BERRY, RENEE R	
			ART UNIT	PAPER NUMBER
			2818	

DATE MAILED: 03/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/612,068	Applicant(s) IDA, KOJI	
	Examiner Renee R Berry	Art Unit 2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 July 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6 are rejected under 35 U.S.C. 102(e) as being anticipated by US

Patent No. 6,417,083 to Mori.

In regards to claim 1, Mori teaches a method of manufacturing a semiconductor device, comprising the steps of: forming a silicon oxide film, a silicon nitride film, and an antireflection coating made of a material containing oxygen atoms, successively on a semiconductor substrate; patterning said silicon oxide film, said silicon nitride film and said antireflection coating; performing a reduction treatment for reducing an amount of said oxygen atoms on said antireflection coating; using said antireflection coating after said reduction treatment, said silicon nitride film, and said silicon oxide film as a mask to etch said semiconductor substrate, thereby forming a trench in a main surface of said semiconductor substrate; and filling said trench with an insulating film at column 5, lines 3-4, 18-22, and 36-38.

In regards to claim 2, Mori teaches a plasma treatment on said antireflection coating in an atmosphere into which a gas containing hydrogen atoms is introduced at column 6, lines 10-15.

In regards to claim 3, Mori teaches a method of manufacturing a semiconductor device, comprising the steps of: forming a silicon oxide film, a silicon nitride film, and an antireflection coating made of a material containing oxygen atoms, successively on a semiconductor substrate; patterning said silicon oxide film, said silicon nitride film, and said antireflection coating; using said antireflection coating, said silicon nitride film and said silicon oxide film as patterned as a mask to etch said semiconductor substrate using an etching gas with a higher etching rate in a flat portion of an upper surface of said antireflection coating than an etching rate in a facet portion, thereby forming a trench in a main surface of said semiconductor substrate and filling said trench with an insulating film at column 5, lines 3-4, 18-22, and 36-38.

In regards to claim 4, Mori teaches the method of manufacturing a semiconductor device wherein said etching gas includes a fluorocarbon-based gas at column 7, lines 45-46.

In regards to claim 5, Mori teaches a method of manufacturing a semiconductor device, comprising the steps of: forming a silicon oxide film, a silicon nitride film, and an antireflection coating made of a material containing oxygen atoms, successively on a semiconductor substrate, patterning said silicon oxide film, said silicon nitride film, and said antireflection coating, using said antireflection coating, said silicon nitride film, and said silicon oxide film as patterned as a mask to etch said semiconductor substrate

using a gas having a reduction function, thereby forming a trench in a main surface of said semiconductor substrate; and filling said trench with an insulating film at column 5, lines 3-4, 18-22, and 36-38.

In regards to claim 6, Mori teaches the method of manufacturing a semiconductor device wherein said gas having a reduction function includes a gas containing hydrogen atoms, and said trench is formed by etching said semiconductor at column 6, lines 10-15.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Renee R Berry whose telephone number is (571) 272-1774. The examiner can normally be reached on M-F 9-5:30.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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RRB

February 15, 2004



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Supervisory Patent Examiner
Technology Center 2800